

**Remarks**

The Office Action mailed February 13, 2004 has been received and reviewed. Claim 27 having been amended, claim 34 having been cancelled, and claims 39-42 having been added, the pending claims are claims 1-33 and 35-42. Reconsideration and withdrawal of the rejections are respectfully requested.

New claims 39-41 are supported by claim 1 and the specification at page 7, line 28 through page 8, line 13.

New claim 42 is supported by claim 1 and the specification at page 7, lines 4-15.

**The 35 U.S.C. §103 Rejection**

The Examiner rejected claims 1-38 under 35 U.S.C. §103 as being unpatentable over Russell et al. (U.S. Patent No. 6395194) in view of James et al. (U.S. Patent No. 6,069,080). This rejection is respectfully traversed.

Russell et al. provide a method of removing noble metal material from a substrate having the noble metal material deposited thereon (abstract). Russell et al. indicate that the substrate is subjected to chemical mechanical polishing with a chemical mechanical polishing composition containing abrasive polishing particles and a halide-based oxidizing agent (abstract).

James et al. describe a fixed abrasive chemical mechanical polishing system that includes particles such as silica, alumina, titania, and ceria.

Applicant respectfully submits that Russell et al. and James et al. fail to support a proper *prima facie* case of obviousness as, besides other things, Russell et al. and James et al. fail to teach or suggest all the elements recited in the claims of the present invention. For example, Russell et al. fails to teach or suggest a fixed abrasive article. In addition, both Russell et al. and James et al. fail to teach or suggest the relationship of the hardness of the abrasive particles to the successful polishing of Group VIII metals with a fixed abrasive article, as is done in the present invention. That is, there is no teaching or suggestion that ceria is better than any

of the other abrasives listed (alumina, silica, titania) in James et al. when used in a fixed abrasive article.

Applicant has discovered that for Group VIII metal-containing surfaces, "methods with relatively hard particles such as alumina ( $\text{Al}_2\text{O}_3$ ) and silica ( $\text{SiO}_2$ ) particles...can cause smearing and the formation of defects rather than the clean removal of the material" (see Applicant's specification at page 7, lines 4-7). Further, they have found that "the use of a fixed abrasive article that includes abrasive particles having a hardness of no greater than about 6.5 Mohs reduces, and often eliminates, the problems of smearing and defect formation. Such particles include, for example, ceria ( $\text{CeO}_2$ ), which has a hardness of about 6.0 Mohs, as well as yttrium oxide ( $\text{Y}_2\text{O}_3$ ), which has a hardness of about 5.5 Mohs, and ferric oxide ( $\text{Fe}_2\text{O}_3$ ), which has a hardness of about 6.0 Mohs. This is in contrast to alumina abrasive particles, which have a hardness ranging from about 8.5 Mohs to about 9.0 Mohs, and silica abrasive particles, which have a hardness ranging from about 7.5 Mohs" (see Applicant's specification at page 7, lines 7-15).

Thus, there is no specific teaching of planarizing Group VIII metal-containing surfaces with a fixed abrasive containing particles such as ceria (without any adverse smearing or defect formation)) or other abrasive particles having a hardness of no greater than 6.5 Mohs) in either document, considered either alone or in combination.

In addition, a suggestion or motivation to combine Russell et al. and James et al. cannot be found in either the documents themselves or from the knowledge of persons of ordinary skill in the art. For example, Russell et al. or James et al. fail to suggest or motivate one skilled in the art to combine the documents.

Furthermore, with respect to the dependent claims, there is no teaching or suggestion of the claimed invention in either document, either considered alone or in combination. For example, there is no teaching or suggestion of the advantages of the claimed invention with respect to the selectivity ratio recited in claims 23 and 38. Also, there is not

Applicant(s): MICRON TECHNOLOGY, INC.

Int'l Appln No.: PCT/US02/40406

Int'l Filing Date: 17 December 2002

For: METHODS FOR PLANARIZATION OF GROUP VIII METAL-CONTAINING SURFACES USING A  
FIXED ABRASIVE ARTICLES

---

teaching or suggestion of the advantages of the claimed invention when the composition includes an oxidizing agent, a complexing agent, or mixtures thereof.

For the above reasons, Applicant submits that the pending claims are patentable over the combination of Russell et al. and James et al. Reconsideration and withdrawal of the rejections are, therefore, respectfully requested.

#### **New Claims 39-42**

Furthermore, it is respectfully submitted that the new claims are patentable over the art of record. For example, with respect to new claims 39-41 (as well as original claims 2, 15, 24-26, for example), there is no teaching or suggestion of the claimed invention with respect to a surface having a nonplanar topography and the advantages associated therewith with respect to the rate of removal of material (e.g., wherein the rate of removal of material is at least about 10 times greater than the rate of removal of material from a generally planar surface of the same material under the same conditions). With respect to new claim 42, there is no teaching or suggestion of reduced smearing and defect formation on the planarized surface when using a fixed abrasive article with the claimed particles compared to the same method and surface planarized with a fixed abrasive article comprising alumina or silica particles.

**Response to Written Opinion**

Page 13 of 13

Applicant(s): MICRON TECHNOLOGY, INC.

Int'l Appln No.: PCT/US02/40406

Int'l Filing Date: 17 December 2002

For: METHODS FOR PLANARIZATION OF GROUP VIII METAL-CONTAINING SURFACES USING A  
FIXED ABRASIVE ARTICLES

---

**Summary**

It is respectfully submitted that the pending claims 1-33 and 35-42 are in condition for allowance and notification to that effect is respectfully requested. The Examiner is invited to contact Applicant's Representatives, at the below-listed telephone number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted for  
**Gundu M. Sabde**

By  
Mueting, Raasch & Gebhardt, P.A.  
P.O. Box 581415  
Minneapolis, MN 55458-1415  
Phone: (612) 305-1220  
Facsimile: (612) 305-1228  
**Customer Number 26813**

May 10, 2004  
Date

By: Ann M. Mueting  
Ann M. Mueting  
Reg. No. 33,977  
Direct Dial (612)305- 1217

---

**CERTIFICATE UNDER 37 CFR §1.10:**

"Express Mail" mailing label number: EV 201890343 US Date of Deposit: May 10, 2004

The undersigned hereby certifies that the Transmittal Letter and the paper(s) and/or fee(s), as described hereinabove, are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR §1.10 on the date indicated above and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

By: Sara E. Olson  
Name: Sara E. OLSON

---